REMARKS

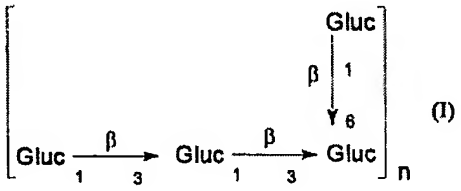
By this amendment, Applicants have detected several typos in the application as published and have submitted amendments which correct these accordingly. It will be evident that these are minor corrections of inadvertent errors, and no new matter has been entered. For reasons as set forth in detail below, Applicants submit that the present application now overcomes all of the prior rejections and should be placed in condition for allowance.

REJECTIONS UNDER 35 USC § 103(a)

Claims 1, 5-7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yvin et al. (WO 99/39718) in view of Kim et al. (Carbohydr. Res. 2000). Applicants respectfully traverse this rejection for the reasons that follow.

The Examiner has reconsidered the overall teaching of Yvin and, according to him, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select any of the oligosaccharides described by Yvin to administer for their art-disclosed utility of the treatment of cancer.

Applicants have also reconsidered the overall teaching of Yvin. Yvin relates to a medicine capable of modifying apoptosis dysfunctions and that may comprise as an active substance an oligosaccharide derived from the polymers of the group comprising beta-1-3-glucans (optionally comprising beta-1-6-branching). These glucans are further described by general formula (I)



(I)

wherein n=1 to 50. Compounds according to formula (I) are thus constituted by 3, 6, 9, 12 [...] glucose units.

As a matter of fact, general formula (I) of Yvin does not encompass the compounds of the invention as claimed, i.e. laminaritetraose (4 glucose units) and laminaripentaose (5 glucose units), which are linear chains of glucose units linked by beta-1-3 branching.

The compounds of the invention are thus neither disclosed nor suggested in Yvin and thus it would **not** have been obvious for one skilled in the art at the time the invention was made to use laminaritetraose and laminaripentaose in a therapeutical method as claimed in present claim 1.

Applicants further reconsidered the overall teaching of the Kim et al. reference. Kim relates to the structural characterization of beta-D-(1-3, 1-6)-linked glucans using NMR spectroscopy. Structural characteristics and solubility of beta-D-(1-3, 1-6)-linked glucans used in this study are listed in Table 1. Amongst them, Laminarapentaose is cited. This pentaglucan, within the meaning of Kim et al., should be constituted as 5 glucose units and should contain beta-D-(1-3) together with beta-D-(1-6) branching (see for example Fig. 1 of Kim).

The present invention relates to the use of laminaripentaose and laminaritetraose. Within the meaning of the invention, laminaripentaose have the formula given in Example 2, i.e. a linear chain of 5 glucose units exclusively linked with beta-D-(1-3) branching. Laminaripentaose of the invention seems thus different from laminarapentaose cited in Kim et al. In this regard, these two compounds have different names. In addition, laminaritetraose is neither cited nor suggested in Kim et al.

As Kim et al do not disclose or suggest the specific compounds used in the present invention, i.e. laminaripentaose and laminaritetraose, it was thus **not** obvious, for the person skilled in the art, having knowledge of Yvin et al. in view of Kim et al., to use laminaripentaose and laminaritetraose for the manufacture of a medicament.

Moreover, Applicants respectfully submit herein the missing data of Table 6 of the invention, as cited by the Examiner, together with a declaration of Professor Vaclav Vetvicka certifying the veracity of such data. A complete Table 6 is as follows:

	24 hours	48 hours
Laminaritetraose	28.1	35.9
Laminaripentaose	79.6	38.7
Laminarin	19.4	0

Table 6: Concentration of TNF alpha in pg/mL of blood of treated mice after different durations of treatment

This table gives comparative data between laminaripentaose, laminaritetraose and laminarin. This table clearly shows that, surprisingly and unexpectedly, at 24 hours post treatment or 48 hours post treatment, laminaripentaose, laminaritetraose are both more potent to maintain high concentrations of TNF alpha in the blood of mice. Since TNF is associated with in vitro and in vivo killing of tumor cells, table 6 shows that, surprisingly and unexpectedly, laminaripentaose and laminaritetraose have significantly higher anti cancer activity than laminarin.

Therefore, in addition to the fact that laminaripentaose and laminaritetraose are not disclosed or suggested neither by Yvin nor by Kim, these two compounds have a high and unexpected activity in treating tumors. Hence the person skilled in the art having knowledge of Yvin in view of Kim would **not** have expected that the two specific oligo-beta-(1-3)-glucans of instant claim 1 have higher anti-cancer activity than long chain glucans such as laminarin.

Accordingly claim 1 and its dependent claims are indeed unobvious over Yvin et al. in view of Kim et al., and the Examiner's rejection on this basis is respectfully traversed and should be withdrawn.

Claims 1, 4-7, and 10 are rejected under 35 USC § 103(a) as being unpatentable over Yvin et al in view of Kim et al. and further in view of Hillmann et al. Applicants respectfully traverse this rejection for the reasons that follow.

The teachings of Yvin et al. and Kim et al. are as set forth above.

Hillmann et al. teaches that disorders which are associated with decreased apoptosis include cancers of the brain, tongue, colon, bladder, lung, and skull, hormone-dependent cancer including breast, prostate, uterine, testicular, and ovarian cancer, lymphomas and leukemias.

However, even though Hillmann et al. teaches specific types of cancer which are related to apoptosis dysfunction, and for the reasons given above, the person skilled in the art having knowledge of Yvin et al. and Kim et al. would never have been motivated to expect that laminaritetraose and laminaripentaose have significantly higher anti cancer activity than long-chain glucans such as laminarin.

Accordingly claim 1 and its dependent claims are indeed unobvious over Yvin et al. in view of Kim et al. and further in view of Hillmann et al., and the Examiner's rejection on this basis is respectfully traversed and should be withdrawn.

Claims 1 and 5-10 are rejected under 35 USC § 103(a) as being unpatentable over Yvin et al in view of Kim et al. and further in view of Penney et al. Applicants respectfully traverse this rejection for the reasons that follow.

The teachings of Yvin et al. and Kim et al. are as set forth above.

The fact that Penney at al. teaches the use of immunomodulatory peptides, alone, or in combination with chemotherapeutic agents for the treatment of cancer, would never have motivated the person skilled in the art having knowledge of Yvin et al. and Kim et al. to administer laminaritetraose and laminaripentaose in combination with an immunomodulatory agent and/or chemotherapeutic agent.

Accordingly, claim 1 and its dependent claims are indeed unobvious over Yvin et al. in view of Kim et al. and further in view of Penney et al., and the Examiner's rejection on this basis is respectfully traversed and should be withdrawn.

In view of the above, Applicants submit that the invention as presently claimed is not disclosed or suggested by the cited prior art references, and that the rejections of the Examiner on the basis of these references should be withdrawn.

In this regard, Applicants believe that the application is now in proper form for allowance, and thus favorable consideration and prompt allowance of these claims are respectfully requested.

Respectfully submitted,

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